



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/414,004	10/07/1999	VICTOR KATSAP	2925-0411P	2693

7590 07/27/2004
Harness Dickey & Pierce P L C
P O Box 8910
Reston, VA 20195

EXAMINER

FERNANDEZ, KALIMAH

ART UNIT PAPER NUMBER

2881

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/414,004

Applicant(s)

KATSAP ET AL.

Examiner

Kalimah Fernandez

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-50, 52, 53, 55, 56, 58-67, 69 and 70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 41-50, 52, 53, 55, 56, 58-67, 69 and 70 is/are rejected.
- 7) ☒ Claim(s) 57 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 41-42, 47-48, 55, 58-59, and 64-65 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No 4,499,405 issued to Loda.
3. Loda discloses an electron gun for generating an electron beam (col.2, lines 11-24).
4. Loda discloses at least one lens array (56,60) placed in a drift space adjacent to the electron gun. Loda discloses also the lens array (56, 60) effectively causes splitting of the electron beam into a plurality of sub beams to control emittance of the electron exposure tool (col.8, line 61- col.9, line 12).
5. As per claims 42 and 59, Loda discloses the lens array (56,60) located in the electron gun assembly (see fig.10).

6. As per claims 47-48 and 64-65, Loda discloses the lens array (56,60) being mesh grid (s) (col.8, lines 12-14).

7. As per claim 55, Loda discloses increasing the emittance by producing a divergent beam from an incoming electron beam (col.7, lines 51-59).

8. As per claim 58, Loda discloses an electron gun for generating an electron beam (col.2, lines 11-24).

9. Loda discloses at least one lens array (56,60) placed in a drift space adjacent to the electron gun. Loda discloses also the lens array (56, 60) effectively causes splitting of the electron beam into a plurality of sub beams to control emittance of the electron exposure tool (col.8, line 61- col.9, line 12).

10. Claims 41-42, 52-53, 58-59 and 69-70 stand rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No 4,338,548 issued to Bono et al.

11. Bono et al discloses an electron gun (12) including an electron assembly (or electron beam tube); and at least one lens array (11,21) placed in a drift space adjacent to said electron gun (see fig.1).

12. Bono et al discloses the lens array (21) for control the emittance of the electron gun by reduction of aberrations and astigmatism (col.2, lines 30-68).

13. Bono et al inherently discloses splitting the beam into sub-beam by virtue of each grid having multiple apertures (see fig.1).

14. As per claims 42 and 59, Bono et al discloses at least one lens array disposed (21) with the electron assembly (col.5, lines 56-65;see fig.2).

15. As per claim 58. Bono et al discloses supplying an electron beam with an electron gun (12) including an electron assembly (or tube)(col.1, lines 8-24); and placing at least one lens array (11,21) in a drift space, adjacent to the electron gun (12) (see fig.2).

16. As per claims 53 and 70, Bono et al discloses an EBAL apparatus (col. 2, line 36).

17. As per claims 52 and 69, Bono et al discloses transmission of the electron beam within the recited range (see fig.2).

18. As per claim 55, Bono et al discloses correcting the lack of coaxial symmetry (col.4, lines 45-51), thereby Bono et al discloses the production of a more diverging beam, which will inherently be coaxial symmetry (see col.2, lines 45-68;col. 7, lines 29-30).

19. Claims 41-42,47-49,58-59 and 64-66 stand rejected under 35

U.S.C. 102(b) as being anticipated by US Pat No.5,013,963 issued to Ikegami et al.

20. Ikegami et al discloses an electron gun having an electron gun assembly as depicted in fig.2a (see col.1, lines 52-68).

21. Ikegami et al discloses at least one lens array (2-5 grids) located in the drift space on the electron gun assembly and adjacent to the gun (1).

22. Ikegami et al discloses said lens array for controlling (i.e. by focusing) emittance of said electron beam exposure tool (col.2, lines 36-49).

23. Ikegami et al discloses splitting the beam into three sub-beams (col.1, lines 31-35;col.3, lines 31-34)

24. As per claims 42 and 59, Ikegami et al discloses at least one lens array (2-5) are placed in said electron gun assembly (see fig. 2a; col.3, lines 9-45).

25. As per claims 47-49 and 64-66, Ikegami et al discloses the employment of grids having a plurality of holes (i.e. mesh grids) (col.3, lines 46-65).

26. As per claim 58, Ikegami et al discloses supplying an electron beam with an electron gun (1) including an electron gun assembly depicted in fig.

2a; and placing at least one lens array (2-5) in a drift space, adjacent to the electron gun (1).

Claim Rejections - 35 USC § 103

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. Claims 43-46, 54 and 60-63 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bono et al as applied to claims 41 and 58 above, and further in view of US Pat No 5,376,792 issued to Schamber et al.

29. Bono et al teaches the claimed invention except for a liner.

30. However, Schamber et al teaches employment a liner in a replaceable electron gun (col. 4, lines 45-61).

31. It would have been obvious to an ordinary artisan to incorporate the teachings of Schamber et al into Bono et al since Schamber et al teaches the improve performance using a column liner (col.1, line 47-col.2, line 13).

32. As per claims 44 and 61, Schamber et al teaches vacuum-tightness (col.4, lines 54-61).

33. As per claim 54, Schamber et al teaches a liner tube connectable (or coupled) to the electron gun (col.4, lines 45-61).

34. As per claims 45-46 and 62-63, Schamber et al teaches coupling of the electron gun and liner by clamping (col.7, lines 20-52). In addition, Schamber teaches alternatively welding (col.4, line 30).

35. Claims 50-51,56 and 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bono et al as applied to claims 41 and 58 above, and further in view of US Pat No 5,059,804 issued to Fink et al.

36. Bono et al teaches the claimed invention except for a continuous foil.

37. However, Fink et al teaches the fabrication of micro lens made of foil (col.2, lines 52-59).

38. It would have been obvious to an ordinary skilled artisan to incorporate the teachings of Fink et al into Bono et al since Fink et al teaches increasing brightness (col.3, lines 41-63).

39. As per claim 56, the obvious combination of Bono et al and Fink et al would reasonably teach increasing the brightness by the recited factor (see col.3, lines 45-49).

Allowable Subject Matter

40. Claim 57 has been previously objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. This objection stands.

Response to Arguments

41. Applicant's arguments filed 5-18-04 have been fully considered but they are not persuasive. Applicant argues two points: 1) Bono fails to teach splitting the electron beam into a plurality of sub beams, and 2) Ikegami's grid are comparable to the claimed lens array because these grids are not placed in a "drift space" and further that Ikegami fails to teach splitting the electron into a plurality of sub beams. Each will be addressed in turn.

42. In response to applicant's argument that Bono discloses accessing only one of the micro lenslets and therefore could not split the beam as presently claimed. However, it is pointed out that each grid of the micro-lens comprises multi-aperture so that it would inherently split the electron beam as recited.

43. MPEP 2111 states that each claim must be given its broadest reasonable interpretation consistent with the specification. Ikegami are located between cathode and anode, which constitutes a drift space. Obviously, Ikegami teaches the splitting of the electron into three sub-beams.

Conclusion

44. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory

period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalimah Fernandez whose telephone number is 571-272-2470. The examiner can normally be reached on Mon-Tues 6:30-3:30; Wed-Thurs 8-5 and Fri.9am-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kf



JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800